

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2004/002385

International filing date (day/month/year)
26.07.2004

Priority date (day/month/year)
29.07.2003

International Patent Classification (IPC) or both national classification and IPC
G01R31/36

Applicant
TOYOTA JIDOSHA KABUSHIKI KAISHA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Mapp, G

Telephone No. +49 89 2399-6057



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/IB2004/002385

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/002385

Box No. II Priority

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/002385

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 21

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for the whole application or for said claims Nos. 21

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/002385

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	5-9,14-18
	No: Claims	1-4,10-13,19,20
Inventive step (IS)	Yes: Claims	5-9,14-18
	No: Claims	1-4,10-13,19,20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	21

2. Citations and explanations

see separate sheet

Re Item III.

Claim 21 claims a system of any of the preceding claims, but does not add any features, and therefore cannot be searched.

Re Item V.

1 Cited Documents

The following documents are referred to in this communication:

- D1 : EP 0 909 001 A (TOYOTA MOTOR CO LTD ; DENSO CORP (JP); MATSUSHITA
ELECTRIC IND CO LTD) 14 April 1999 (1999-04-14)
D2 : US 6 359 419 B1 (SARBACKER SHAWN D ET AL) 19 March 2002 (2002-03-19)

2 INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
Document D1 discloses (the references in parenthesis applying to this document):

A battery pack charge/discharge control apparatus (**D1 Para. 54**) for controlling charge/discharge of a battery pack (12) that is formed by combining a plurality of unit batteries (10) of a secondary battery type, characterized by comprising:

charge/discharge restriction means (200) (**D1 Claim 7**) for restricting the charge/discharge based on at least one of a capacity upper limit value and a capacity lower limit value of the unit batteries (10) constituting the battery pack (12);

remaining capacity detection means (14, 200) (**D1 Claims 1 and 5**) for detecting remaining capacities of unit batteries (10) constituting the battery pack (12);

control value computation means (200) (**D1 Claims 1 and 5**) for computing a control state-of-charge value based on at least one of a minimum value (Q_{min}) and a maximum value (Q_{max}) of the detected remaining capacities;

capacity difference computation means (200) (**D1 Claims 1 and 5**) for computing, as a capacity difference (Q_d), a remaining capacity difference between the remaining capacity of a first unit battery and the remaining capacity of a second unit battery among the unit batteries (10) whose remaining capacities have been detected, the remaining capacity of the second unit battery being less than the remaining capacity of the first unit battery;

storage means (200) (**D1 Para. 48 - 96**) for storing a correlation between the capacity difference (Q_d) and an apparent state-of-charge value (apparent SOC) that is different from the control state-of-charge value (representative SOC); and

apparent state-of-charge value computation means (200) for computing an apparent state-of-charge value (apparent SOC) with reference to the correlation based on the capacity difference (Qd).

3 INDEPENDENT CLAIM 10

This claim discloses the same features as claim 1, and as such the same arguments apply.

4 INDEPENDENT CLAIM 19

This is the corresponding method claim of claims 1 and 10, and is thus implicitly disclosed.

5 INDEPENDENT CLAIM 20

This essentially defines a program which runs on a computer, both the method steps (defined in claim 19) and the computer are known. The program is considered to be a method or system and thus is not novel for the same reasons as for claim 19.

6 DEPENDENT CLAIMS 2-4, 11-13

Dependent claims 2-4, 11-13 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

7 Conclusions

The examiner considers that a novel and inventive independent apparatus claim can be derived from claims 1 to 4 characterized by claim 5. The parallel claims 10 to 18 are not necessary as they do not add any features beyond the first set of claims.